WE CLAIM AS OUR INVENTION:

1. A magnetic resonance apparatus comprising:

a magnetic resonance scanner having an imaging volume;

a coil arrangement in said scanner adapted to be supplied with a temporally changing current to generate a magnetic gradient field in said imaging volume;

said scanner including an electrically conductive structure at least partially surrounding said coil arrangement and in which, due to said current in said coil arrangement, eddy currents are caused that produce an eddy current field that interferes with said gradient field in said imaging volume;

said coil arrangement having at least two conductor sections selected from the group consisting of a first conductor section that contributes to the generation of the gradient field, and that generates, via the electrically conductive structure, a first eddy current field in the imaging volume, representing a first interference factor, a second conductor section that contributes to the generation of the gradient field, thereby generating, via the electrically conductive structure, a second eddy current field in the imaging volume, representing a second interference factor, and that additionally generates a field for compensating the first eddy current field, and a third conductor section that contributes exclusively to compensation of said first and second interference factors; and

one of the conductor sections that contributes to compensation of said interference factors being spaced, relative to said imaging volume, at

less than or equal to a distance of one of the conductor sections contributing to the gradient field.

2. A magnetic resonance apparatus as claimed in claim 1 comprising an actuatable switch connected to said third conductor section for, when closed, short circuiting said third conductor section.

3. A magnetic resonance apparatus as claimed in claim 1 wherein at least two of said conductor sections are connected in series.

4. A magnetic resonance apparatus as claimed in claim 1 comprising a first controllable voltage source connected to one of the conductor sections, and a second controllable voltage source connected to at least one of the conductor sections not connected to the first controllable voltage source, said second controllable voltage source being operable independently of the first controllable voltage source.

5. A magnetic resonance apparatus as claimed in claim 1 comprising a single controllable voltage source connected to at least two of the conductor sections respectively via at least one circuit component selected from the group consisting of an inductive transmitter and a filter device.

6. A magnetic resonance apparatus as claimed in claim 1 wherein said first conductor section is disposed on a first surface in said scanner and said third conductor section is disposed on a second surface in said scanner that is separated from said imaging volume by a shorter distance than said first surface.

7. A magnetic resonance apparatus as claimed in claim 6 wherein said first surface is formed by a first cylinder jacket and wherein said second surface is formed by a second cylinder jacket.

8. A magnetic resonance apparatus as claimed in claim 1 wherein said second conductor section is disposed on a first surface in said scanner and said third conductor section is disposed on a second surface in said scanner that is separated from said imaging volume by a shorter distance than said first surface.

9. A magnetic resonance apparatus as claimed in claim 8 wherein said first surface is formed by a first cylinder jacket and wherein said second surface is formed by a second cylinder jacket.

10. A magnetic resonance apparatus as claimed in claim 1 wherein said electrically conductive structure has a shape for causing, at least within the imaging volume, an eddy current field generated via the electrically conductive structure, to be geometrically similar to the gradient field.

11. A magnetic resonance apparatus as claimed in claim 10 wherein said electrically conductive structure has a barrel-like bulge.

12. A magnetic resonance apparatus as claimed in claim 1 wherein said scanner includes a superconducting basic field magnet having a vacuum vessel, and wherein said vacuum vessel forms said electrically conductive structure.

13. A magnetic resonance apparatus as claimed in claim 12 wherein said vacuum vessel has a barrel-like bulge for causing the eddy current field generated by the vacuum vessel to be geometrically similar to the gradient field, at least within the imaging volume.